

Frontrunners: a series of policy briefs to inform national governments on the economic and social benefits of action for sustainable cities

# Reduced waste and improved livelihoods for all: Lessons on waste management from Ahmedabad, India

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## CONTENTS

|   |    |
|---|----|
| Highlights  | 3  |
| Collecting and recycling waste with small municipal budgets                           | 4  |
| Methodology   | 5  |
| The policy context: National missions and waste management rules in India             | 6  |
| The case study: A mix of formal and informal waste management strategies in Ahmedabad | 7  |
| Scaling up the benefits   | 10 |
| Policy recommendations  | 11 |
| Conclusions   | 12 |
| Endnotes  | 13 |

Better waste management is essential to meet the Paris Climate Agreement goals. Waste is already responsible for up to five percent of global greenhouse emissions and waste production from cities is set to almost double by 2020. Cutting waste generation through prevention, reduction, recycling and reuse is the fifth target of the 2030 Sustainable Development Goal 12.

Conventional approaches to solid waste management have often proven unaffordable and ineffective. This paper analyses the lessons from Ahmedabad, India. It finds that clear national leadership that supports municipal authorities to integrate unionised informal waste pickers into formal municipal waste management can deliver competitive recycling rates at lower costs, whilst also improving the income, health, job security and inclusion of marginalised groups, reducing urban poverty and enhancing climate resilience.

In Ahmedabad, collaboration between the municipality and local workers’ unions led to waste pickers’ monthly earnings increasing from Rs. 1,500 (US\$21) to Rs. 6,000 (US\$84), a significant increase to household incomes. Waste pickers in Ahmedabad prevent about 200,000 tonnes of carbon dioxide equivalent (CO<sub>2</sub>-e) emissions annually—the equivalent of removing 130,000 cars from the road each year.



Photo credit: Visty Banaji

## About this policy brief

This policy brief was prepared by the University of Leeds. It was developed in partnership with the Coalition for Urban Transitions, which is a major international initiative to support decision makers to meet the objective of unlocking the power of cities for enhanced national economic, social, and environmental performance, including reducing the risk of climate change. The research presented here was conducted in support of the Coalition's Economics workstream, and builds on previous University of Leeds and Coalition research on the economic and social benefits of low-carbon cities. The opinions expressed and arguments employed are those of the authors.

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This policy brief is one of a series on frontrunning climate actions in cities around the world. The objective of this series is to strengthen the evidence on the economic and social implications of low-carbon, climate-resilient urban development. The series focuses on providing robust data on actual or ex post outcomes of climate action, ranging from better public health to job creation to greater equity. Each case study explores some of the preconditions for the successful design and delivery of urban climate action and provides national policy recommendations that could enhance their effectiveness and benefits.

## Highlights

- Cutting waste generation through prevention, reduction, recycling and reuse is the fifth target of the 2030 Sustainable Development Goal (SDG) 12, which focuses on sustainable consumption and production. **Improved waste management is essential for supporting sustainable economic development** and reducing poverty in the long term by decoupling resource use and economic growth; limiting air, soil and water pollution; and creating jobs and livelihoods.
- The world's urban centres are set to produce 2.2 billion tonnes of waste a year by 2025—almost double the amount produced in 2012. Waste contributes an estimated 3–5 per cent of global greenhouse gas emissions, as the methane emissions that come from waste are an especially potent greenhouse gas. **Aggressive mitigation in this sector could make a significant contribution to tackling climate change**, reducing average global temperature increases by up to 0.5°C over the next 50 years.<sup>1</sup>
- **About 90 per cent of residual waste in India is dumped in public spaces.**<sup>2</sup> Municipal solid waste management emerged only recently as a specific policy priority for the Government of India, which introduced the Solid Waste Management Rules in 2000. Compliance with the legislation by municipalities is very low, however, with only 10 per cent of collected waste receiving treatment.<sup>3</sup>
- The Swachh Bharat Mission—a **centrally funded national cleanliness drive**—explicitly encourages municipalities to enumerate and integrate informal waste pickers into formal solid waste management systems.<sup>4</sup> But many policy-makers opt for large-scale technological solutions, such as new waste-to-energy plants, which can be part of the solution but can also adversely affect the vulnerable groups involved in waste picking.
- **Up to 1 per cent of the urban population in developing countries—between 15 and 20 million people worldwide—is engaged in informal waste picking activities.** These workers make a valuable contribution to municipal solid waste management but face significant health risks and stigma for their work. In India the livelihoods of an estimated 1.7 million people depend on collecting, sorting, using and selling this waste. Informal waste pickers recover about 20 per cent of total recyclable waste, diverting 42 million tonnes of waste away from landfill and into recycling streams. **Performing this service themselves would cost municipalities about 15–20 per cent of their average annual budgets**, even without considering the value of wider social, economic and environmental benefits.
- In Ahmedabad, a city of about 6 million people in western India, an estimated 50,000 people work in hazardous conditions to gather, sort and recycle waste. In 2004, the Self-Employed Women's Association (SEWA) entered into a contract with a self-governing suburb of Ahmedabad to collect and segregate waste from more than 45,000 households. SEWA provided training to the waste pickers, the local government covered the upfront investment to cover administrative costs and equipment, and households paid small user fees to SEWA members. This contractual arrangement **substantially improved the working conditions and incomes of the informal waste pickers**. Earnings increased from about Rs. 1,500 (US\$20) to Rs. 6,000 (\$80) a month, the workers' occupational health vastly improved and 2,000 of their children received school scholarships. **The programme also increased the efficiency of waste collection: 70 per cent of all waste was recycled through this programme.**

- Waste pickers in Ahmedabad prevent about 200,000 tonnes of carbon dioxide equivalent (CO<sub>2</sub>-e) emissions annually—the equivalent of removing 130,000 cars from the road each year. **A typical waste picker in Ahmedabad has a negative total carbon footprint of 4 tonnes CO<sub>2</sub>-e**—mitigating the emissions of two average Delhi citizens, one average global citizen, or one-third of the average New Yorker.
- **Governments have an alternative to capital-intensive solutions to waste management.** Partnerships with the informal waste sector may offer less expensive arrangements while generating larger social and economic benefits. National governments can facilitate the systematic inclusion of informal waste pickers in municipal waste management systems by, for example, removing legal and practical barriers that prevent municipalities from contracting waste picker cooperatives; reducing policy biases towards technological solutions; and making waste producers responsible for recovery, recycling and re-use after consumption, which can create new economic opportunities for waste picker associations.

## Collecting and recycling waste with small municipal budgets

### THE GLOBAL CHALLENGE

Rapid urbanisation, population growth, rising incomes and changing consumption patterns have resulted in a vast increase in the amount of solid waste generated worldwide, especially in cities. By 2025, the world's urban centres are projected to produce 2.2 billion tonnes of waste a year, almost twice the 1.3 billion tonnes produced in 2012.<sup>5</sup> Municipal solid waste management has thus emerged as one of the most pressing challenges in towns and cities.

Sustainable waste management practices generate substantial socioeconomic co-benefits, particularly in developing countries, where they can create employment and improve public health.<sup>6</sup> Recycling can save energy, supply valuable raw materials to industry and create jobs, although avoiding or reducing the production of waste is obviously preferable. If handled poorly, however, the collection, transportation, treatment and disposal of solid waste can pose severe risks to urban residents and the environment at large. Poor waste management practices can exacerbate flooding by blocking drainage channels and lead to public health issues, such as respiratory conditions, dengue fever and diarrhoea.<sup>7</sup> They can also cause air, water and land pollution and contribute to climate change, through the production of methane, a potent greenhouse gas.

Conventional emissions inventories, which focus primarily on waste treatment and disposal processes, estimate that the waste sector accounts for about 3–5 per cent of global greenhouse gas emissions.<sup>8</sup> Emissions reductions from improved resource management could make a much larger contribution to greenhouse gas abatement than such inventories suggest, however, as the prevention and recovery of waste materials (particularly through recycling) could reduce emissions across all sectors of the economy.<sup>9</sup> These benefits are especially great in the developing world, where the mitigation potential of the sector is three times higher than in developed countries.<sup>10</sup>

Informal sector waste workers provide valuable services in developing country cities by recovering materials that would otherwise be directed to landfill and returning them to the value chain (through recycling or reuse). The World Bank estimates that up to 1 per cent of the urban population in developing countries—between 15 and 20 million people worldwide—is engaged in informal waste picking activities.<sup>11</sup> Their actions help reduce greenhouse gas emissions, flooding and the spread of disease.<sup>12</sup>

Informal waste pickers often comprise the most marginalised segments of the population and face significant risks in their work. A large number are women, children or recent migrants, and almost all come from low castes.<sup>13</sup> Their working conditions are hazardous, their pay is meagre and inconsistent, and they face considerable prejudice because of their work, further excluding already marginalised groups.<sup>14</sup>

Waste pickers are among the people at greatest risk from the adverse effects of climate change. They often reside in informal settlements close to dumpsites with inadequate infrastructure, exacerbating their exposure and sensitivity to extreme weather events. Health problems from exposure to waste reduce their ability to cope with heat and other stresses. Protecting waste pickers' livelihoods and improving their occupational health can help build their resilience to climate-related shocks.<sup>15</sup> A pro-poor waste management strategy that balances environmental objectives with the interests of low-income urban residents therefore presents an opportunity to move towards both more efficient climate action and more effective poverty alleviation.<sup>16</sup>

## THE CHALLENGE IN INDIA

Estimates of India's urban waste generation vary considerably, but most evaluations place it between 47–62 million tonnes a year.<sup>17</sup> This figure seems modest when compared with that of some developed countries. The United States of America, for example, generates more than 250 million tonnes of waste a year, despite having a population that is just a quarter the size of India's.<sup>18</sup> However, India's urban population is expected to reach 800 million by 2050. If current trends persist, waste generation can be expected to grow in parallel.<sup>19</sup> Landfills and dumpsites within or close to urban centres are filling up rapidly, causing severe air, water and land pollution and emitting significant levels of methane. The composition of the country's waste is also changing. In the past, most of it was organic. Today a growing share is made up of paper and plastics, which require more complex and sophisticated treatment, further complicating the challenge India faces.

Despite significant efforts in recent years, many local governments (which are usually responsible for waste management) lack the capacity, budget or infrastructure to manage such volumes. Municipalities in India spend an estimated Rs. 70–Rs. 150 (US\$1–\$2) per capita a year on solid waste management.<sup>20</sup> These figures are a fraction of what cities in the United States of America pay (US\$13–60) and less than 1 per cent of what Rotterdam, in the Netherlands, pays (US\$187).<sup>21</sup> The possibility of private or donor financing—for example, for large-scale incinerators and waste treatment plants, which municipalities could otherwise not afford—is thus seen as particularly attractive, yet adopting such a technology-focused strategy would likely forgo opportunities for recycling and value creation.

In many cities in India, less than half of all waste produced is collected, and a mere 10 per cent of the collected waste is treated safely.<sup>22</sup> Segregation of waste, which affects the total amount of waste that is recycled, is inadequate.<sup>23</sup> Waste is often incinerated in vast quantities, releasing toxic fumes (particularly from the increasing volume of plastic waste), diverting recyclable materials away from the value chain and taking away jobs from the large number of informal workers who have traditionally collected and segregated the country's waste.<sup>24</sup>

About 1.7 million people work in India's informal waste sector.<sup>25</sup> Estimates of exactly how much waste the informal sector manages vary, but by all accounts it is a substantial proportion: Most sources estimate waste pickers recover about 20 per cent of total recyclable waste,<sup>26</sup> helping make India's recycling systems as efficient as systems in developed countries. Waste pickers provide an important public service with considerable environmental and socioeconomic benefits at little to no cost to the government, effectively subsidising the work of municipalities. Despite the importance of their role, however, waste pickers are stigmatised, a discrimination with roots in caste, gender and cross-border migration.<sup>27</sup> A growing body of literature recognises the contribution the informal sector makes to environmental health, and various stakeholders are calling for the integration of informal waste pickers into formal waste management practices.<sup>28</sup>

## Methodology

This paper draws on research conducted in Delhi and Ahmedabad in India. It is based on 16 interviews with various stakeholders (five members of civil society, four former municipal officials, two academics, and one representative each of the national and state government); one focus group of waste pickers; and site visits to dumpsites and waste picking routes. Documents examined included contracts, court cases, and organisational reports. The authors also conducted their own economic analyses to estimate the contribution of the informal sector to reducing greenhouse gas emissions.

# The policy context: National missions and waste management rules in India

## THE NATIONAL POLICY CONTEXT

Municipal solid waste management emerged only relatively recently as a specific policy priority for the Indian government. Adoption of the Solid Waste Management Rules of 2000 represented the first time the central government explicitly prescribed rules for municipalities with regard to managing waste. Since then, new mechanisms for facilitating sustainable waste management practices have been formulated, and waste management has appeared in various national programmes designed to address broader urban challenges in India.

### The Solid Waste Management Rules 2016

The Solid Waste Management Rules 2016 (which supersede the version adopted in 2000) provide a framework for addressing waste management. The rate of compliance is very low, however. Despite the rules' emphasis on safe and scientific disposal, only an estimated 10 per cent of collected waste receives treatment—and in some cities less than half of all waste is collected at all.<sup>29</sup> The rules are notable for their acknowledgment of the role of the informal sector in waste management practices, but they provide little guidance on the process or framework for including waste pickers in practice.<sup>30</sup>

### The Swachh Bharat Mission

Launched in October 2014, the Swachh Bharat (“Clean India”) Mission is a centrally funded nationwide cleanliness drive that aims to improve sanitation and waste management across India by 2019. The flagship programme of Prime Minister Narendra Modi's Bharatiya Janata Party government, Swachh Bharat has received unprecedented attention because of the high-level political involvement. Perhaps its most notable success is the widespread awareness it has generated through an extensive media and marketing campaign. Critics argue that Swachh Bharat has framed waste as an aesthetic concern, however, and it has failed to address the underlying municipal and infrastructural shortfalls or recognise major socioeconomic issues.<sup>31</sup>

The Swachh Bharat guidelines highlight the informal sector as a special focus group: “In their efforts to streamline and formalize solid waste management systems, it shall be the endeavour of municipalities that the informal sector workers in waste management (rag pickers) are given priority to upgrade their work conditions and are enumerated and integrated into the formal system of solid waste management in cities.”<sup>32</sup> In an attempt to operationalise this guideline, in 2018 the Ministry of Housing and Urban Affairs released another set of guidelines that link Swachh Bharat to the National Urban Livelihoods Mission, a poverty alleviation scheme that aims to improve access to employment for the urban poor.<sup>33</sup> Whether municipalities apply its suggestions remains to be seen.

### The Smart Cities Mission

In 2015 the central government launched the Smart Cities Mission, an urban renewal programme with the objective of providing sustainable and inclusive core infrastructure in 100 Indian cities through technology-driven development. Although the programme is far broader in scope than just the waste sector, it offers incentives for the use of “smart” solutions, such as waste-to-energy or source-segregation technologies, failing to acknowledge that informal waste pickers are currently the most efficient segregators in India.<sup>34</sup>

The Smart Cities Mission is implemented at the city level, through “special purpose vehicles”—companies established by the national government for this purpose. This mechanism encourages privatisation and reduces public accountability and transparency.

## MUNICIPAL WASTE MANAGEMENT

State governments direct cities in implementing national policies and provide financial and technical support for implementation. However, their guidelines rarely include any technical or organisational details for executing a municipal solid waste management strategy.

Much of the responsibility for keeping cities clean sits with urban local governments, which often lack the resources and capacity (both human and financial) to implement efficient waste management strategies.<sup>35</sup> Funding for municipal solid waste management in Indian cities is usually assigned from the annual municipal budget on an ad hoc basis rather than based on any estimate of costs, resulting in inefficient public spending. Municipalities are responsible for a wide range of other civic services, such as water supply, sanitation, and sewerage, which tend to take precedence. Most municipalities in India are unable to generate revenue from the waste sector because of the small tax base—more than a quarter of the country’s urban population lives below the poverty line<sup>36</sup>—a problem that is compounded by endemic corruption.

It is perhaps unsurprising therefore that municipalities are increasingly looking at technological fixes such as incineration-based waste-to-energy, which are made attractive by liberal concessions provided through Smart Cities and the Swachh Bharat Mission or private sector involvement, advanced by the Solid Waste Management Rules. Far from being the “silver bullet” municipalities hope for however, privatisation and technology-intensive approaches pose new problems when not embedded within local circumstances. Recycling rather than incinerating offers a range of value-adding opportunities that benefit local communities, businesses and municipalities while potentially achieving the same reductions in greenhouse gas emissions.

Most “smart” solutions require significant upfront investment, which can be difficult to recoup. In contrast, improving recycling systems has very low capital requirements.<sup>37</sup> The informal sector achieves recycling rates comparable to those achieved by developed country systems. Achieving similar levels of waste collection, sorting and reuse would typically cost 15–20 per cent of a municipality’s annual budget. Technology-based methods also threaten the livelihoods of already marginalised waste pickers. Despite these drawbacks, local governments typically opt for imperfect copies of waste management processes in the developed world.<sup>38</sup>

National policies and frameworks can draw attention and resources to municipal solid waste management. Though there are signs of progress, particularly in awareness raising, these frameworks remain insufficient, however. Urban waste is framed almost solely as an environmental policy issue; it is poorly integrated with social justice concerns, development goals at the local level or urban management more broadly. Different rules and missions often negate one another, making actions at best disjointed and at worst contradictory. There is a need for greater interaction between national level ministries, municipal authorities, jurisdictions and other stakeholders to move towards a more integrated and inclusive form of waste management.

## The case study: A mix of formal and informal waste management strategies in Ahmedabad

Ahmedabad is India’s seventh-largest city, with a population of 6.5 million and an area of 466 square kilometres. It has a reputation for pioneering urban management, having implemented the first large-scale Bus Rapid Transit system in India. It now aspires to become “resource efficient and zero waste” by 2031, through efforts led by the city’s local government, the Ahmedabad Municipal Corporation (AMC).<sup>39</sup>

Ahmedabad generates almost 4,000 tonnes of solid waste daily. The AMC collects roughly 60 per cent of it, disposing of 90 per cent of it unsustainably at a dumpsite in Pirana.<sup>40</sup> This extremely large share of waste going to landfill has resulted in severe pollution in the area surrounding Pirana, which now consists of more than 200 million tonnes of waste. More than 40 metres tall at its highest point, Pirana looms over the city in a physical manifestation of Ahmedabad’s inadequate waste management practices.

The complexities of implementation and competition among stakeholders are illustrative of the challenges faced nationwide. Government officials cite a lack of civic responsibility as the primary cause of the city’s waste problem; civil society representatives argue that the poor performance of the AMC in the collection, treatment and recycling of the waste is the problem. The city also faces challenges integrating an active informal waste sector, which currently employs an estimated 50,000 people (see Box 1), who work in precarious conditions.

Box 1

**How much do informal waste pickers contribute to reductions in greenhouse gas emissions?**

Ahmedabad has about 50,000 waste pickers, who each recycle about 10.6 kilograms of waste daily, according to a representative of the Self-Employed Women’s Association (SEWA). If they worked 200 days a year, they could reduce emissions of carbon dioxide equivalent (CO<sub>2</sub>-e) by 200,000 tonnes a year—the equivalent of removing 130,000 cars from the road each year<sup>41</sup>—all at no cost to the municipality.

Some 1.7 million people in India work as informal waste pickers. If all of them recycled as much waste as the pickers in Ahmedabad (a conservative assumption given the small shares of metals and high-value plastic in Ahmedabad), waste pickers could theoretically remove 6.8 megatonnes of CO<sub>2</sub>-e (MtCO<sub>2</sub>-e) a year globally—equivalent to the CO<sub>2</sub> emissions of countries such as Albania or Uruguay.

**INITIAL SUCCESS: THE SELF-EMPLOYED WOMEN’S ASSOCIATION**

The Self-Employed Women’s Association (SEWA) is an organisation of informal women workers established in Ahmedabad in 1972. More than 25,000 women waste pickers are associated with SEWA in Ahmedabad. For an annual membership fee of Rs. 5 (US\$0.07), the women become part of a trade union that fights for improvements in its members’ wages and working conditions. SEWA members are also encouraged to form cooperatives, which promote solidarity among and self-reliance of members and provide or facilitate a range of developmental benefits, including childcare facilities, access to credit and social security.

In 2004 SEWA entered into a contract with Vejalpur (a self-governing *nagar palika* [ward] of Ahmedabad) to collect and segregate waste from more than 45,000 households. The *nagar palika* made an upfront investment of about Rs. 16 million (US\$230) for the procurement of simple equipment, such as handcarts and gloves, and paid the women a monthly salary of Rs. 1,125 (US\$16). The women also received a user fee of Rs. 10 (US\$0.15) per household and any additional income they generated from selling the collected waste. SEWA provided training for the women both in how to use the protective equipment and in how to behave when dealing with households.

The programme was a success. The women’s monthly earnings increased from about Rs. 1,500 (US\$21) to up to Rs. 6,000 (US\$84), their occupational health vastly improved and 70 per cent of all waste was recycled, according to interviews with SEWA staff, SEWA cooperative members, and Vejalpur (see Box 2).

## Box 2

**The Self-Employed Women's Association (SEWA) at a glance**

- Number of members nationwide: 1.9 million
- Number of informal waste pickers in Ahmedabad: 50,000 (60 per cent of them women)
- Number of waste pickers in Ahmedabad that belong to SEWA: 26,089
- Monthly earnings before SEWA was contracted by the *nagar palika*: Rs. 1,500
- Monthly earnings after SEWA was contracted by the *nagar palika*: Up to Rs. 6,000
- Number of SEWA waste pickers in Ahmedabad with identity cards: 5,000
- Share of SEWA waste pickers in Ahmedabad with a bank account: 80 per cent
- Number of children of SEWA waste pickers in Ahmedabad awarded scholarships: 2,000
- Number of SEWA waste pickers in Ahmedabad that received social security benefits: 3,120

Sources: Interview with SEWA staff; D. Mahadevia and J.M. Wolfe. 2008. *Solid Waste Management in Indian Cities: Status and Emerging Practices*. New Delhi: Concept Publishing Company.

SEWA provided workers, the *nagar palika* made an upfront investment and households paid small user fees, in a model that combined the benefits of efficiency, sustainability and inclusion. The success of the model demonstrates how straightforward it can be to improve the working conditions of waste pickers and how a supportive policy environment can enable organisations of informal workers to help workers transition from marginal activities to legally protected work without having to compromise on aspects of informality that waste pickers' value, such as flexible hours.

**CHALLENGES: PRIVATISATION AND TECHNOLOGY**

After its initial success, SEWA faced difficulties maintaining a constructive dialogue with the relevant authorities. In 2009 the Vejalpur *nagar palika* was incorporated into the AMC, which is mandated to deliver public service. It claimed that the informal workers were too unreliable in their operations. Expecting greater efficiency from the private sector—and perhaps having recognised the profitability of the waste sector—the AMC issued a tender for waste collection in Vejalpur, eventually awarding the contract to private waste management companies. SEWA argues that the conditions of the contract were designed to give private companies an advantage; local government actors argue that SEWA was unable or unwilling to align with market-driven approaches.<sup>42</sup>

The national policy shift towards more technology-intensive solutions has also displaced many SEWA members. The AMC recently entered into public–private partnerships for the development of two incineration-based waste-to-energy plants, each of which is designed to process 1,000 tonnes of waste a day. Existing plants in India are operating well below capacity, largely because of the relatively low calorific value and high moisture content of urban waste. As a result, net energy recovery is often negative. To overcome this problem, operators sometimes substitute recyclable waste, such as plastic, which produces pollutants when incinerated. Plants may thus produce more harmful emissions than they save and deny the informal sector access to combustible recyclable materials.<sup>43</sup>

Private recycling companies are competing with social for-profit enterprises such as Wealth out of Waste and Let’s Recycle, which are capitalising on an enabling policy environment. These innovative business models have already proven that they can make a positive environmental impact. Since 2012, for example, Let’s Recycle has diverted 10,000 tonnes of waste from landfill.<sup>44</sup> Most such companies in Ahmedabad are paid per tonne of waste disposed, meaning their interest is primarily in collecting the largest possible volume of waste, putting them in direct competition with the informal sector. In an effort to prevent potential conflict and avoid undesirable social repercussions, some companies have employed waste pickers or are looking for ways to do so. For example, Let’s Recycle, which works with the AMC, employs 1,000 waste pickers, according to a municipal official.

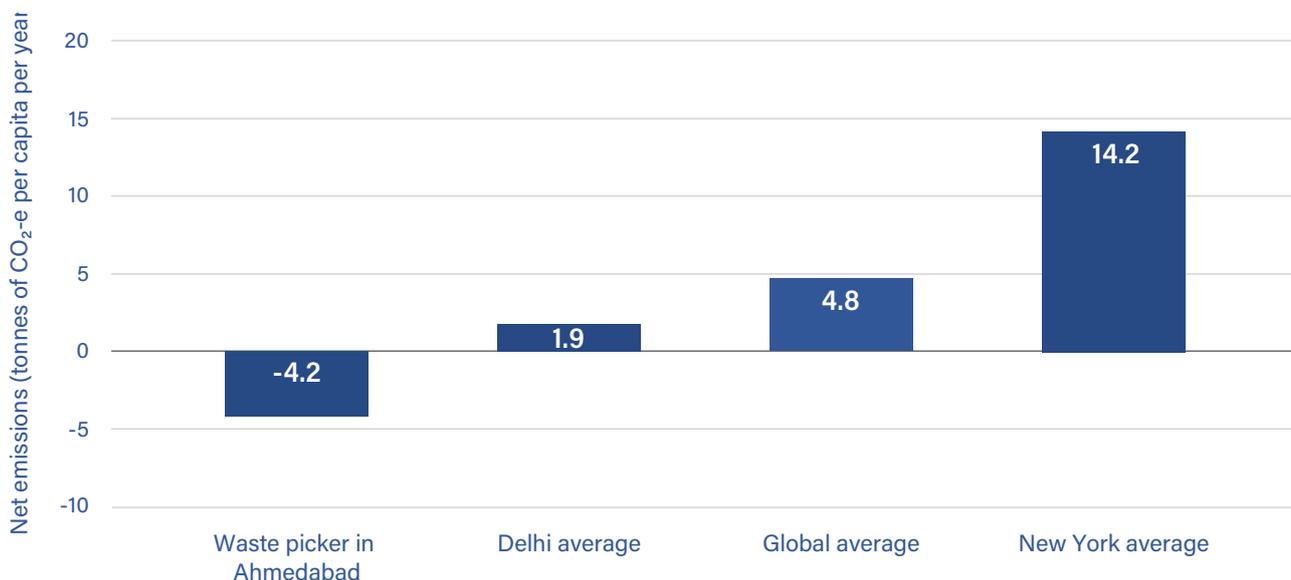
Box 3

**The carbon footprint of a waste picker from Ahmedabad**

Individuals’ contribution to climate change depends not only on the greenhouse gas emissions they produce directly (e.g., by driving cars and heating their homes) but also on the impact they have on upstream and downstream emissions (e.g., by eating meat). Waste pickers in Ahmedabad, who typically earn about US\$1–\$2 a day, have very little opportunity to consume the goods and services that contribute to upstream emissions. As a consequence, they are (conservatively) responsible for only 0.9 tonnes CO<sub>2</sub>-e of per capita emissions a year. At the same time, waste pickers contribute to significant savings of downstream emissions by recycling. Given the assumptions in Box 1, a typical waste picker in Ahmedabad has a negative total carbon footprint of about 4 tonnes of CO<sub>2</sub>-e per year. He or she therefore mitigates the emissions of two average Delhi citizens, one average global citizen and almost a third of the average New Yorker.

Box figure 3.1

**Carbon footprints of various global citizens**



## Scaling up the benefits

Ahmedabad's successes—and its shortcomings—in solid waste management cannot be attributed to one actor, one sector or one governance structure. Although action has been scattered and seemingly uncoordinated, it has achieved some localised outcomes, despite the absence of a comprehensive guiding framework. However, the current shift towards privatisation and modernisation of waste management practices—coupled with the push for waste-to-energy technologies—could reverse hard-earned gains, endangering the livelihoods of thousands of waste pickers.

An estimated 85 per cent of total employment in Ahmedabad is informal,<sup>45</sup> yet there is no place for informal workers in official governance structures. Many city planners consider the methods used by waste pickers unsophisticated (and therefore undesirable).<sup>46</sup> Significant evidence suggests that integrating the informal sector into municipal waste management strategies could yield social, environmental (see Box 3) and fiscal benefits. Low-income households that depend on waste picking would see improved working conditions and higher incomes, which translate into better health outcomes and greater social inclusion. Local authorities and urban residents would benefit from more efficient and cost-effective solid waste management.<sup>47</sup>

Cooperatives like SEWA are one way in which informal workers can organise and present an opportunity to revitalise and build on traditional Indian economic structures.<sup>48</sup> Trade unions can play an important role in organising a collective voice and defending their labour rights.<sup>49</sup> SEWA's work in Vejalpur demonstrates how support from local authorities can enable action. Its exclusion from tender processes presents a serious obstacle to sustainable waste management practices. Allowing organisations of waste pickers to bid for municipal solid waste management contracts could have a major positive impact on the workers' livelihoods.<sup>50</sup> Organisations of informal workers have the potential to empower waste pickers to participate in formal administrative procedures, such as tender processes. They can facilitate their competitiveness in national markets while protecting their rights and maintaining the flexibility of these jobs.

Work is increasingly being redirected away from informal waste pickers towards private sector operators. The AMC has attempted to adopt a multitude of approaches, some of which accommodate opposing interests. Profit-driven enterprises in Ahmedabad have demonstrated how private players can contribute to achieving environmental goals, and an emerging group of companies are beginning to align their processes with societal issues. However, greater primacy needs to be placed on poverty reduction, social inclusion and citizen voice, possibly through collaborations with people living and working in the informal sector.<sup>51</sup> The AMC could play a strong regulatory role; organisations of informal workers like SEWA could create crucial links between the formal and informal sectors.<sup>52</sup>

The inclination towards privatisation is exacerbated by the national focus on “modern” technology as a solution to India's waste problems, driven largely by the Smart Cities and Swachh Bharat Missions, which incentivise waste-to-energy technologies. These approaches to waste management are often divorced from local realities.<sup>53</sup> In Ahmedabad the waste picker is a familiar and accepted component of society that need not be replaced by mechanisation. Rather than improving the efficiency or reducing the risks of solid waste management, technology-intensive solutions implemented with a lack of contextual awareness can intensify both environmental and social problems.

## Policy recommendations

Four main policy recommendations emerge from this case study.

- 1. Make it legally and practically straightforward to involve informal waste pickers in municipal waste management systems**

Waste pickers are often excluded from securing municipal contracts for solid waste management, either explicitly or implicitly by the complexity and rigidity of procurement processes. National governments can formally recognise waste picking (and related jobs) as an occupation, so that it is easier to document the number of people in the

industry and their working conditions. They can also enable organisations of informal workers to participate in tendering processes—by, for example, requiring bidders to include specific groups of workers or permitting municipalities to hire waste picker cooperatives *without* tendering. Such actions could make partnerships with organisations of informal waste pickers more attractive to municipal governments by reducing the transaction costs.

## 2. Reform national policies to reduce biases towards technological solutions

Governments that want to be perceived as progressive and modern are increasingly favouring technocratic solutions. Such solutions involve high capital costs and are not necessarily as efficient at collecting, sorting or recycling waste. Replacing regulations that recognise waste as a renewable energy source with regulations that favour composting and the reuse and resale of resources could have beneficial effects on municipal budgets, the environment and workers at the bottom of the income distribution.

## 3. Improve the coordination of top-down and bottom-up waste management activities

Sustainable and inclusive waste management requires an integrated, holistic and multistakeholder approach that optimises synergies between state-led, market-driven and community-based strategies. National policies designed with the interests of all stakeholders in mind could prevent the implementation of inconsistent or contradictory processes. At the grassroots level, greater attention needs to be given to replicating and upscaling emerging but still isolated best practices, such as organising informal workers into cooperatives or employing them in microenterprises or public–private partnerships.

## 4. Hold producers of waste responsible for recovery, recycling and re-use after consumption

Policies that hold producers of waste responsible for what happens to it encourage waste minimisation and reduce the proportion of waste going to landfill. For waste pickers, such policies can create opportunities to secure work from large private firms that produce substantial amounts of waste. National governments can complement such policies with financial incentives for the recycling industry and support to establish relationships and contracts between private firms and waste picker associations.

# Conclusions

Thanks to high-profile nationwide campaigns and incentivised high-tech strategies led by Prime Minister Modi and his government, solid waste management has now received long overdue attention, stimulating state and municipal authorities to pay greater heed to the challenge. At the same time, informal or “unofficial” grassroots organisations are lobbying for change and providing service delivery (in the form of door-to-door waste collection, waste picking and recycling), demonstrating the value for both society and the environment of working with diverse stakeholders.

Organised informal workers can achieve waste collection, reuse and recycling rates that are comparable to those of private sector alternatives and much better than some high-tech waste-to-energy programmes. The much lower capital investment needs free up public resources to address other pressing development needs. Formal partnerships between municipalities and informal waste pickers can also enhance the livelihoods and reduce the stigma many of the poorest and most marginalised urban residents face. Enhanced economic and social opportunities in turn can enhance resilience to climate change, by making people healthier and giving them greater political voice. Partnerships with large formal enterprises are less likely to yield these benefits.

Many municipal authorities have adopted contradictory approaches to waste management, in an attempt to accommodate opposing interests and generate much-needed investment. Decision-makers must explicitly recognise the differing interests of stakeholders and evaluate the wider implications of different approaches so that they can design policies and programmes that are both environmentally sustainable and socially inclusive.

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## ABOUT THE COALITION FOR URBAN TRANSITIONS

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**The Coalition for Urban Transitions** – launched in 2016 at the Climate Leaders’ Summit in New York – is a major new international initiative to support decision makers to unlock the power of cities for enhanced national economic, social, and environmental performance, including reducing the risk of climate change. The Coalition provides an independent, evidence based approach for thinking about ‘well managed’ urban transitions to ensure that the growth of urban areas, and the accompanying process of economic, social, and environmental transformation, maximises benefits for people and the planet.

The initiative is jointly managed by the **C40 Cities Climate Leadership Group (C40)** and **World Resources Institute (WRI) Ross Center for Sustainable Cities**. Members include over 20 major institutions spanning five continents, including research institutions, city networks, international organizations, infrastructure providers, and strategic advisory companies. The initiative will be overseen by a Global Urban Leadership Group to steer and champion the work.

Follow the Coalition’s work at [www.coalitionforurbantransitions.org](http://www.coalitionforurbantransitions.org) on LinkedIn, on Twitter @NCEcities and Facebook @coalitionforurbantransitions.

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The University of Leeds is a founding member of the prestigious Russell Group of Universities and a leader among UK research intensive institutions. With over 8000 staff and 32000 students, the University of Leeds is consistently ranked in the top 100 Universities worldwide and the School of Earth and Environment has been recognised among the top 50 Environment schools globally. For the most recent work from the University of Leeds on urban areas and climate action please visit [www.candocities.org](http://www.candocities.org)

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